UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ROBERT K. LOWRY

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Appeal No. 2005-2489
Application No. 09/949,736

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ON BRIEF

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Before MCQUADE, PAK and TIMM, ***Administrative Patent Judges***.

PAK, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's refusal to allow claims 19 through 38 and 40 through 44. Claim 39, the only other claim pending in the present application, was indicated to be allowable "if rewritten independent form including all of the limitations of the base claim and any

intervening claims."[1] See the Supplemental Answer, page 2. We have jurisdiction pursuant to 35 U.S.C. § 134.

APPEALED SUBJECT MATTER

The subject matter on appeal is directed to an apparatus for removing a plastic encapsulant from an integrated circuit. See the specification, page 1. The apparatus includes a chamber, a stage, a laser and a means for relatively moving a plastic encapsulated integrated circuit with respect to a laser beam (different from the stage). See, e.g., claim 19. The stage "is an X, Y positioning table . . . . Such X, Y positioning tables are well known in the art." See the specification, page 3. A hinge may be provided at one end of the table so that the plastic encapsulated integrated circuit can be rotated to a substantially vertical position. ***Id.*** "In its vertical position, the laser beam 26 has an acute angle of incidence on the surface of the [plastic encapsulated integrated circuit]." ***Id.*** Details of the appealed subject matter are provided in illustrative claims 19 and 37, which are reproduced below:

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[1]Claim 28 recites "means for adjusting the orientation . . . " corresponding to the hinge limitation recited in claim 39. However, the examiner has not indicated it to be allowable over the prior art cited. Nor has the appellant specifically argued the patentability of this limitation in the Brief.

19. An apparatus for removing a plastic resin encapsulant form an encapsulated integrated circuit comprising:

a chamber having an optical opening, a dispersion fluid inlet and an exhaust outlet;

a laser mounted on the outside of the chamber and aligned with the optical opening for directing a laser beam onto a surface of the encapsulated integrated circuit for selectively removing portions of the encapsulant; and

means for relatively moving the integrated circuit with respect to the laser beam.

37. An apparatus for removing encapsulant from a device [sic] under test (DUT), the apparatus comprising:

a chamber having an optical opening, a dispersion fluid inlet and an exhaust outlet, the optical opening adapted to allow a laser to direct a laser beam on a surface of the DUT for removing portions of the encapsulant;

a stage in the chamber adapted to receive and hold the DUT; and

a dust bin in the chamber adapted to collect debris from the removed portions of the encapsulant.

THE PRIOR ART REFERENCES

The examiner relies upon the following prior art references in support of the Sections 102(b) and 103(a) rejections before us:

Karlson	4,052,603	Oct. 4, 1977
Gartner et al. (Gartner)	5,254,832	Oct. 19, 1993
Somers et al. (Somers)	6,140,604	Oct. 31, 2000

THE REJECTIONS

The appealed claims stand rejected as follows:

(1) Claims 19 through 33, 37, 40 and 42 through 44 under 35 U.S.C. § 102(b) as anticipated by the disclosure of Gartner;

(2) Claim 38 under 35 U.S.C. § 103 as unpatentable over the disclosure of Gartner;

(3) Claims 34 through 36 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Gartner and Somers; and

(4) Claim 41 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Gartner and Karlson.

OPINION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments and evidence advanced by the examiner and the appellant in support of their respective positions. As a result of this review, we made the determinations which follow.[2]

[2] For purposes of this appeal, we limit our discussion to the claim specifically argued by the appellant in accordance with 37 CFR § 41.37(c)(1)(vii).

We begin with the claim language. ***Gechter v. Davidson***, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997); ***In re Paulsen***, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994). Generally, we interpret the claims on appeal by giving words therein the broadest reasonable meanings in their ordinary usage, taking into account the written description in the appellant's specification. ***See, e.g., In re Morris***, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); ***In re Yamamoto***, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984). When the words in the claim are written in "means-plus-function" formats, however, we interpret them as being limited to the corresponding structures described in the specification and the equivalents thereof in accordance with the requirements of 35 U.S.C. § 112, paragraph 6. ***In re Donaldson***, 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994)(***in banc***). The manner in which a "means-plus-function" element is expressed, either by a function followed by the term "means" or by the term "means for" followed by a function, is unimportant so long as the modifier of that term specifies a function to be performed. ***Ex part Klumb***, 159 USPQ 694, 695 (Bd. App. 1967). The use of the term "means" in the claim raises a presumption that the means-

plus-function element is intended. ***See Sage Prods. Inc. v. Devon Indus., Inc.***, 126 F.3d 1420, 1427, 44 USPQ2d 1103, 1109 (Fed. Cir. 1997). Nevertheless, such presumption is not applicable if the claim recites sufficient structures for carrying out the function of the means-plus-function element. ***See Enviroco Corp v. Clestra Cleanroom, Inc.,*** 209 F. 3d 1360, 1364-65, 54 USPQ2d 1449, 1452-53 (Fed. Cir. 2000); ***Al-Site Corp. v. VSI Int'l Inc.***, 174 F.3d 1308, 1319, 50 USPQ2d 1161, 1167 (Fed. Cir. 1999); ***Unidynamics Corp. v. Automatic Products International Ltd.***, 157 F.3d 1311, 1319, 48 USPQ2d 1099, 1104-1105 (Fed. Cir. 1998).

Applying the above precedents to the present case, we interpret the term "stage in the chamber adapted to receive and hold an encapsulated integrated circuit" as used in claims 19 and 37 as including any conventional X, Y positioning table capable of receiving and holding (supporting)[3] an encapsulated integrated circuit. This interpretation is consistent with the written description found at page 3 of the specification, which states in relevant part:

[3] According to page 586 of ***WEBSTER'S II New Riverside University Dictionary*** (1994)(attached to this decision), the meaning of the term "hold" embraces "support".

> The stage 2 is an X, Y positioning table . . . . Such X, Y positioning tables are well known in the art.

With respect to the phrase "means for relatively moving the integrated circuit with respect to the laser beam" recited in claim 19, we treat it as a means-plus-function limitation pursuant to 35 U.S.C. § 112, paragraph 6. Accordingly, we consult the specification to determine the scope of such a means-plus-function limitation. As is apparent from dependent claims 20 through 22, the means-plus-function limitation recited in claim 19 is broad enough to encompass those corresponding to the means-plus-function limitations recited in claims 20 through 22.

We observe that the specification does not explicitly link the means-plus-function element recited in claim 19 to any specific structure. Rather, the specification states (page 3, lines 23-26, page 4, lines 6-11 and page 5, lines 8-10) that:

> The stage 2 is an X, Y positioning table...Such X, Y positioning tables are well known in the art. They may be operated using piezoelectric operators, linear magnetic motors, or lead screws . . . .
>
> . . . .

> . . . The CPU 51 controls operations of the various components of the apparatus 100 via the control bus 30 and control lines 31-36 that respectively connected to . . . laser 8, stage 2 . . . By manual, automatic or semiautomatic operation, the operator may selectively operate any of the controlled components, move the stage to its desired X, Y position, and rotate the top platform of the stage to its desired Z axis orientation
>
> . . . . Of course, if desired, the laser beam 26 may be raster-scanned using optical methods, including prisms and/or mirrors that are selectively moved to sweep the beam across the surface of the DUT 24.

Implicit in this disclosure is that the means-plus-function element recited in claim 19 includes any conventional structures of piezoelectric operators, linear magnetic motors, lead screws and/or controllers (CPUs) for automatically or manually controlling the movement of a conventional laser and/or a X, Y positioning table capable of holding or supporting a plastic encapsulated integrated circuit.

Having interpreted the claims on appeal as indicated ***supra***, we shall evaluate the merits of the examiner's Sections 102 and 103 rejections. To establish an anticipation under Section 102, the examiner must demonstrate that Gartner relied thereupon describes, either expressly or under the principles of inherency, each and every element of the claimed invention. ***See In re Spada***, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990);

RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). The law of anticipation only requires that the claims on appeal "read on" something disclosed in the prior art reference. ***See Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983).

Here, it is not controverted that Gartner describes an apparatus capable of removing an encapsulant from an encapsulated integrated circuit, comprising a chamber having an optical opening, a dispersion fluid inlet and an exhaust outlet, and a laser mounted on the outside of the chamber in the claimed manner. Compare the Answer and the final Office action dated March 6, 2003 in their entirety with the Brief and the Reply Brief in their entirety. With respect to independent claims 19 and 37, the appellant only argues that Gartner does not teach (1) the functionally defined stage recited in claims 19 and 37; (2) the "means for relatively moving the integrated circuit with respect to the laser beam" recited in claim 19; and (3) the dust bin recited in claim 37. See the Brief, pages 5-7. We are not persuaded by these arguments.

First, as found by the examiner (the final Office action dated March 6, 2003, page 3), Gartner teaches "a three-

dimensionally controlled movable target plate" "which can be rotated" and linearly moved. See column 7, lines 61 and 62 and column 8, lines 57-62. According to Gartner, this target plate can be moved in x-y direction and is capable of receiving and supporting (holding) a stack of target materials. See column 10, lines 42-51. Thus, it is reasonable for the examiner to conclude that the stage recited in claims 19 and 37 encompasses the target plate taught by Gartner. The burden is on the appellant to show that the target plate taught by Gartner does not possess the claimed function. ***In re Schreiber***, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997), ***quoting In re Swinehart***, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971)("Where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess characteristic relied on."). However, on this record, the appellant has not carried such burden.

Second, we find that Gartner teaches that the target plate "is continuously moved on in a computer-controlled manner." See column 8, lines 30-31. Thus, we find that Gartner necessarily

teaches a controller (computer) having a conventional structure embraced by those corresponding to the moving means recited in claim 19.

Finally, we note that claim 37, as written, does not specify the structure and location of the claimed dust bin. Moreover, as found by the examiner(the Answer, page 5), Gartner teaches a deposition chamber for collecting ultrafine particles. See also column 8, lines 7-12. That is, the deposition chamber taught by Gartner provides the same or similar function as the claimed dust bin, i.e., collecting ultrafine particles. Thus, it is reasonable for the examiner to conclude that the claimed dust bin embraces the chamber taught by Gartner. The appellant does not refer to any claimed structural feature that would distinguish the claimed dust bin from the chamber taught by Gartner.

With respect to claims 29, 31 and 33, the appellant separately argues that Gartner does not teach the claimed functionally defined laser. See the Brief, page 8. As found by the examiner (the Answer, page 6), however, Gartner teaches the same conventional laser, e.g., NdYAG laser, described at page 4, lines 30-32, of the appellant's specification. Thus, it is reasonable to shift the burden to the appellant to show that the lasers described in Gartner do not possess the claimed function.

Schreiber, 128 F.3d at 1477, 44 USPQ2d at 1432. On this record, the appellant again has not demonstrated that the conventional NdYAG laser does not possess the claimed function.

In view of the reasons set forth above, and in the final Office action dated March 6, 2003 and the Answer, we affirm the examiner's decision rejecting claims 19 through 33, 37, 40 and 42 through 44 under Section 102.

To establish obviousness under Section 103, the examiner must demonstrate that the prior art references relied upon provide some teaching, suggestion or incentive to arrive at the claimed combination. ***ACS Hospital Systems, Inc. v. Montefiore Hospital***, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). This does not mean that the prior art references must specifically suggest making the claimed combination. ***B.F. Goodrich Co. v. Aircraft Braking Systems Corp.***, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996); ***In re Nilssen***, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988)). Rather, the test for obviousness is what the combined teachings of the prior art references would have suggested to those of ordinary skill in the art. ***In re Young***, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and ***In re Keller***, 642 F.2d

413, 425, 208 USPQ 871, 881 (CCPA 1981). This test requires us to take into account not only the specific teachings of the prior art references, but also any inferences which one skilled in the art would reasonably be expected to draw therefrom. ***In re Preda***, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

As evidence of obviousness of the subject matter defined by claims 34 through 36, the examiner relies on the combined teachings of Gartner and Somers. The examiner finds that Gartner teaches the claimed subject matter, except for the shutter recited in claim 34 and the end point detector recited in claims 35 and 36. To remedy these deficiencies in Gartner, the examiner relies on the disclosure of Somers to show "a shutter (column 4, lines 16-49) for closing the optical opening during laser operation and end point detection utilizing light frequency and intensity reflection characteristics (column 2, lines 5[4]-65)." See the final Office action, page 4.

Given that Gartner employs a laser through an optical opening and teaches a need to control a laser intensity to increase the absorptivity and the effectiveness of the laser action (e.g., column 6, lines 3-25), we concur with the examiner that one of ordinary skill in the art would have been led to employ the shutter and the detector taught by Somers, motivated

by a reasonable expectation of improving the operation of the laser ablation system taught by Gartner.

In reaching this determination, we note the appellant's argument that the detector described by the Somers is not taught to be used on a plastic resin encapsulated integrated circuit. However, the examiner correctly points out that the manner in which the claimed detector is intended to be employed does not structurally distinguish it from the detector described by Somers.

The appellant also argues that "the present invention is directed to solve a different problem than what the Gartner et al reference is addressing..." See the Brief, page 10. It appears to be the appellant's position that Gartner is from a nonanalogous art. ***Id.*** However, we concur with the examiner that Gartner is analogous or relevant to the claimed subject matter since it is directed to the same field of the appellant's endeavor, i.e., a laser ablation system.

Thus, having considered all of the evidence of record, we determine that the preponderance of evidence weighs most heavily in favor of obviousness. Hence, we concur with the examiner that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the applied prior art

references. Accordingly, we affirm the examiner's decision rejecting claims 34 through 36 under 35 U.S.C. § 103.

As evidence of obviousness of the subject matter defined by claim 41, the examiner relies on the combined teachings of Gartner and Karlson. The examiner finds that Gartner teaches essentially the subject mater defined by claim 41, except for the claimed joy stick. To account for this deficiency, the examiner relies on Karlson to show a laser control system in which a joy stick is used to control "X and Y movement of the X-Y table". See column 5, lines 24-38.

Given that Gartner teaches a need to control the X and Y movement of a target plate, we concur with the examiner that one of ordinary skill in the art would have been led to employ the joy stick taught by Karlson in the laser ablation system of Gartner, motivated by a desire to improve the control of X and Y movement of its target plate.

Thus, having considered all of the evidence of record, we determine that the preponderance of evidence weighs most heavily in favor of obviousness. Hence, we concur with the examiner that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of the applied prior art

references. Accordingly, we affirm the examiner's decision rejecting claim 41 under 35 U.S.C. § 103.

As evidence of obviousness of the subject matter defined by claim 38, the examiner relies only on the disclosure of Gartner. However, we find nothing in Gartner, which teaches placing the claimed dust bin below the x-y table to receive particles falling through the perforations therein. Thus, we reverse the examiner's decision rejecting claim 38 under Section 103.

CONCLUSION

In summary,

1) the examiner's decision rejecting claims 19 through 33, 37, 40 and 42 through 44 under Section 102 is affirmed;

2) the examiner's decision rejecting claims 34 through 36 and 41 under Section 103 is affirmed; and

3) the examiner's decision rejecting claim 38 under Section 103 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOHN P. MCQUADE Administrative Patent Judge	)	
CHUNG K. PAK Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)	

CKP:hh

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